

## REMARKS

### Rejection Under 35 U.S.C. §103(a)

Claims 1-44 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Turner et al (U.S. Patent No. 5,939,886, hereafter "Turner") in view of Thomas III, et al (U.S. Patent No. 5,273,610, hereafter "Thomas") and further in view of Mavretic (U.S. Patent No. 6,046,594). For the reasons which follow, Applicants respectfully traverse the rejection.

Turner discloses "a plasma monitoring and control method and system monitor and control plasma in an electronic device fabrication reactor by sensing the voltage of the radio frequency power that is directed into the plasma producing gas at the input to the plasma producing environment of the electronic device fabrication reactor." (Abstract). Turner further discloses that the radio frequency power signal sensed is analogous to that from an FM radio signal. (Column 7, lines 33-34). A radio frequency power generator generates a 13.56 MHz signal that "has few or no harmonic signals." (Column 7, lines 34-35). Measuring the radio frequency signal at the load produces a distorted harmonic-rich frequency signal; filter circuits and a splitter selective to the harmonic frequencies of the fundamental frequency, e.g., 13.56 MHz, output to a multiplexer as a clean sine wave signal at a selected harmonic frequency. (Column 7, lines 39-52). A magnitude detector then determines the magnitude of the signal. (Column 7, lines 51-54).

Thomas discloses a current sensor having a radiation emitter and a radiation detector for sensing current flowing to a plasma generating electrode from an RF power source. (Abstract). A voltage sensor and a second current sensor provide the voltage and phase angle of

the current delivered to the plasma generating electrode and permit calculation of the power delivered. (Abstract).

Mavretic discloses a method and apparatus for measuring electrical characteristics between a power source and a load at a set of harmonic frequencies to determine information about the load. (Abstract). The apparatus is disclosed as a system comprising a signal sensing circuit for sampling the signal present on a transmission line, an analog signal processing circuit receiving electrical characteristics from the signal sensing circuit, and a digital signal processing circuit that determines the information about the load based on the data received from the analog signal processing circuit. (Column 3, lines 5-27).

The Examiner references Turner for disclosing a plurality of generator means (identified as no. 12 of figures 1 and 5) for generating a plurality of power outputs onto a single transmission means at a plurality of frequencies, each one of said plurality of outputs having associated characteristics. (Office Action, page 2). And also references Turner for disclosing common detection means for detecting these associated characteristics include means for sensing characteristics of a first generated output at a first frequency, alternating to a second frequency. (Office Action, page 2).

The Examiner acknowledges, however, that Turner fails to disclose features of a common detection means for sensing associated characteristics of a first generated output at a first frequency and the associated characteristics of a second generated output at a second frequency. (Office Action, page 2).

To fill the acknowledged gap, the Examiner references Thomas for disclosing a current sensor having a radiation emitter for sensing current flowing to a plasma generating electrode from a radio frequency source. (Office Action, page 3). According to the Examiner

Thomas further discloses a voltage sensor and a second current sensor to provide the voltage and phase angle of the current delivered to the electrode, and a processor controlling the RF source responsive to the sensed average current, sensed voltage and sensed phase angle of the current. (Office Action, page 3).

To fill the acknowledged gap, the Examiner also references Malvretic for disclosing a system “which can be used” to detect and analyze signals and associated harmonics of a system having an RF power source coupled to a load via a transmission line. (Office Action, page 3).

According to the Examiner, “since the detecting means can be switched to a second frequency, and the tuning means can also be tuned to any desired frequency, it is obvious to say that any number of tuning means can be used with any number of generating means. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Malvretic to the modified system of Thomas and Turner in order to allow a single device to measure voltage current and phase at more than one frequency.” (Office Action, page 3).

Before proceeding with its arguments, Applicant must note that the Examiner cited both Turner and Thomas in the first Office Action as a grounds for rejection under §103 based on the Examiner’s contentions that the claims were obvious in view of the respective disclosures of the citations. Applicant presented its arguments in response, detailing why Turner and Thomas did not render the claims obvious. In the present Office Action, the Examiner indicates that the grounds for rejection are “new”, and Applicant’s unaddressed arguments “moot” in view thereof. Applicant understands this to mean the former rejection is withdrawn, and Applicant successful in their traversal.

Nonetheless, the Examiner now cites Turner and Thomas for reasons that appear to Applicant as almost identical to that set forth in the former §103 rejection, and adds a third reference, Malvretic, presumably as an example of a system that could be added to Turner and Thomas to arrive at what the Examiner regards as a ‘common detection means’. In this regard, the grounds for rejection are not entirely “new” and the citation of Malvretic apparently only extends the Examiner’s original findings with respect to Turner and Thomas. As such, although the Examiner properly issued a new non-final action given the absence of any amendment motivating the introduction of newly cited art, the Examiner’s characterization of the present grounds of rejection “mooting” Applicant’s arguments is unfounded and such piecemeal prosecution wastes both the Applicant’s and the Examiner’s time. Applicant is entitled to know to what degree the Examiner regarded its traversal as effective, and what he may have regarded as insufficient. Absent that, Applicant is forced to reiterate its prior arguments with respect to Turner and Thomas without any more than its educated guess at the Examiner’s position, and to weave its present objections to the citation of Malvretic into its prior position. Applicant is left, thus, to straddle two positions while the Examiner watches in judgment.

Applicant therefore, and respectfully, requests from the Examiner that it receive the full consideration of its arguments presented, and an allowance where its contentions demonstrate the inapplicability of the cited art, as was evidently the case. Rejections that form moving targets based on incremental differences in their support should not permit the Examiner to remain aloof from Applicant’s contentions.

With respect to the rejection as presently configured, Applicant notes that it still has not met the requirements of a *prima facie* case of obviousness. In order to establish a *prima facie* case of obviousness, each of the references cited must teach every element recited in the

claims and identify the necessary motivation to combine these elements. *In re Rouffet*, 149 F. 3d 1350; 47 USPQ2d 1453 (Fed. Cir., 1998). The cited references fail both to teach every element of Applicants' claims and to identify the necessary motivation to combine the teaching to arrive at Applicants' claims. Statements with regard to relevant skill in the art do not suffice to "bridge over gaps in substantive presentation of an obviousness case." *Al-Site Corp. v. VSI International, Inc.*, 174 50 USPQ2d 1161 (Fed. Cir. 1999). It is respectfully submitted that the cited references fail not only to disclose or teach each element of the Applicant's claims, they also fail to provide the requisite suggestion *to do* what the applicants have done.

In support of the rejection, the Examiner has cited three patents, upon the disclosure of which he bases his argument that features of each would be combined in one system and so arrive at the claims. The only possible support the Examiner provides for motivating this combination is merely noting that the citations may be "from the same field of endeavor." This statement, and the rejection as a whole, lack any objective reason to combine the teachings of the references, and without such the rejection is clearly insufficient, as a matter of law. *Ex parte Levengood*, 28 USPQ2d 1300, 1301-02 (BPAI 1993).

Instant Claims 1 and 23 call for "a plurality of generator means for generating a plurality of power outputs onto a single transmission means...at a plurality of frequencies..." Claim 12 calls for "generating a first power output at a first frequency and generating a second power output at a second frequency." Turner, however, discloses a single generator (12) generating a 13.56 MHz signal that has few or no harmonic signals. Moreover, that the same generator appears on multiple drawings does not disclose a "plurality" of generators. Turner thus fails to disclose a plurality of power outputs, at a plurality of frequencies, onto a single transmission means. Clearly, Turner does not meet the elements of Applicants' claims; neither

does the Examiner's rejection. Moreover, no rationale is presented to account for this apparent gap in Turner. All elements and limitations of the Applicants' claims have not been accounted for by the rejection. It therefore fails as a matter of law. *In re Rouffet*, 149 F. 3d 1350; 47 USPQ2d 1453 (Fed. Cir., 1998).

Since Turner fails to disclose generating a plurality of power outputs at a plurality of frequencies, onto a single transmission means, the notion of a common detector means between power sources is necessarily absent. In Turner, a distorted harmonic-rich signal results at the load, where it is measured (and later filtered to avoid distorted results). Turner is not concerned with sensing associated characteristics of first and second outputs at first and second frequencies, in fact, it seeks to reconcile harmonic frequencies to obtain a "clean sine wave signal" for sensing. (See Column 7, lines 50-51). Therefore, apart from the unacknowledged gaps in its disclosure, Turner also fails to teach, suggest or motivate combination to fill the gaps the Examiner acknowledges, i.e., the common detection means as claimed. In the rejection, the Examiner places Turner in a role it cannot fill.

Turner's miscasting notwithstanding, Thomas is also insufficient in the purpose the Examiner assigns for it. Aside from never providing an explanation of how the system of Thomas, and its radiation emitter and detector, would be adapted for use in the system of Turner (even if it there were some motivation, teaching or suggestion to do so in Turner, which there is not) the Examiner does not account in Thomas for Applicants' claimed common detection means or the sensing or switching steps of the Applicants' method claims (Claim 12). Neither has the Examiner shown these to be disclosed by Malvretic. Similarly Malvretic does not disclose detecting associated characteristics of a plurality of outputs from a plurality of generators at a plurality of frequencies.

Nonetheless, the Examiner proposes that, along with the apparatus of Thomas, the apparatus of Malvretic could be combined with the system of Turner to, *arguendo*, result in one device that detects characteristics of multiple outputs at multiple frequencies. Yet, operability and other questions of practicality aside, nowhere does the Examiner provide any clear explanation of how Malvretic *can* be combined in a viable apparatus with the apparatus disclosed in Turner and Thomas and how that combination may be *motivated* by objective evidence shown by any disclosure in any of the citations.

Lack of disclosure as to combining the citations, and lack of motivation showing motivation to combine, is fatal to the rejection. Nonetheless, leaving these considerations aside for a moment, assuming, *arguendo*, the citations are taken together, as the Examiner suggests, it is still inadequate and lacks disclosure of all claimed elements. The Examiner admits that, apart from its other deficiencies Applicant has pointed out, Turner fails to disclose the common detection means of the claim. *Arguendo*, Thomas and Malvretic each disclose at most one detection circuit, respectively. Assuming the apparatus of Turner is supplied with two generators, each having an output at a different frequency, and assuming that one output is monitored by the detection means of Thomas, tuned to its particular frequency, and the other output is monitored by the detection means of Malvretic, tuned to its particular frequency, so as to constitute “a single device to measure the voltage, current and phase at more than one frequency” as the Examiner alleges (and which the Applicant disagrees with) this does not render the claims obvious as nothing discloses: 1) this operation performed on a single transmission line; 2) a common means that alternates or switches from one frequency to another; 3) selecting from one or the other frequency, an associated tuning means. Each of the foregoing are features of one or more of the independent claims pending and the Examiner has not shown any of these

to be present in any of the citations. In sum and even under the most favorable consideration of the Examiner's contentions, the gap in the disclosure of the citations vis-a-vis the claims, i.e., the common detection means as claimed operating on a single transmission line, still yawns.


It is plain that the asserted combination is inadequate to make out a *prima facie* case of obviousness. The citations, even as presently configured, lack the disclosure to meet all of Applicants' claim elements and provide utterly no motivation for the asserted combination. The record contains only the Examiner's speculation as to the ability of the asserted combination to render Applicants' claims obvious. It is well settled, however, that an obviousness rejection must be based on facts, not generalities. *Ex parte Saceman*, 27 USPQ2d 1472, 1474 (BPAI 1993). "Cold hard facts." *In re Freed*, 165, USPQ 570, 571-72 (CCPA 1970). When a rejection under § 103 is not based on facts, it cannot stand. *Ex parte Porter*, 25 USPQ2d 1144, 1147 (BPAI 1992). Speculation and conjecture are not substitutes. Therefore, the rejection fails as to all independent claims, and, as to all other dependent claims. All claims should be allowed.

### CONCLUSION

For the reasons set forth above, reconsideration and allowance of the claims respectfully is requested. If the Examiner has any questions regarding this paper, please contact the undersigned attorney.

Respectfully submitted,

By:

  
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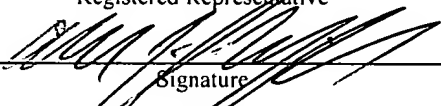
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